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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,943	11/07/2003	Wayne F. Block	GEMS8081.186	2942
27061	7590	04/05/2005	EXAMINER	
ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (GEMS)			KIKNADZE, IRAKLI	
14135 NORTH CEDARBURG ROAD				
MEQUON, WI 53097			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/605,943		BLOCK ET AL.	
	Examiner		Art Unit	
	Irakli Kiknadze		2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/07/2003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7, 9-11 and 13-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Sohval et al. (US Patent 4,637,040).

With respect to claim 1, Sohval teaches an anode assembly comprising: an anode disc (19); a first x-ray source (21) connected to the anode disc (19) and configured to emit a first fan beam of x-rays; a second x-ray source (23) connected to the anode disc (19) and configured to emit a second fan beam of x-rays; and wherein the first x-ray source has a distance from a center of the anode disc different than that of the second x-ray source (column 9, lines 32-60; column 15, line 55 - column 16, line 13).

With respect to claim 2, Sohval teaches that the anode disc (14) is rotatable (column 15, line 56).

With respect to claim 3, Sohval shows that the second fan beam has a

spatial coverage equal to that of the first fan beam (Fig. 14).

With respect to claim 4, Sohval teaches that the anode assembly is incorporated into a CT scanner (see abstract; column 15, lines 66 and 67).

With respect to claim 5, Sohval teaches that the first and the second x-ray sources are positioned relative to one another on the anode disc (14) such that the first and the second x-ray sources may be treated as a single focal point for CT reconstruction (column 5, lines 59-68).

With respect to claim 6, Sohval teaches that each x-ray source is configured to operate at an approximate 50% duty cycle per CT scan (column 5, lines 37-40).

With respect to claim 7, Sohval teaches that each fan beam has a penumbra that extends along a z-axis (column 8, lines 4-27).

With respect to claim 9, Sohval teaches an x-ray tube assembly comprising: a plurality of independently controllable electron sources configured to emit electrons; and a plurality of target electrodes configured to receive electrons emitted by the plurality of independently controllable electron sources and emit a plurality of fan beams of radiographic energy in response thereto (column 9, lines 32-60).

With respect to claim 10, Sohval teaches that each fan beam has a similar spatial coverage (Fig. 14).

With respect to claim 11, Sohval teaches that each fan beam extends along a z-axis (column 8, line 4-27).

With respect to claim 13, Sohval teaches that the plurality of target

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electrodes includes a pair of target electrodes and wherein each target electrode is configured to emit a respective fan beam of x-rays, each fan beam having a focal spot such that the respective focal spots are spaced apart from one another along a z-direction by approximately one millimeter (column 9, lines 61- column 10, line 50).

With respect to claim 14, Sohval teaches 14. The x-ray tube assembly of claim 13 wherein the respective focal spots are spatially separated from one another in an x-direction (column 9, lines 32-42).

With respect to claim 15, Sohval teaches the plurality of electron sources includes a pair of cathode filaments and wherein the pair of cathode filaments is configured to alternately fire during an imaging scan (column 9., lines 46-51).

With respect to claim 16, Sohval teaches that the x-ray tube assembly is incorporated into a CT imaging system (see abstract).

With respect to claim 17, Sohval teaches the CT imaging system including a medical diagnostic imaging scanner (column 8, lines 14-17).

With respect to claim 18, Sohval teaches a CT system comprising: a rotatable gantry (6) having a bore centrally disposed therein; a table movable fore and aft through the bore and configured to position a subject (5) for CT data acquisition; a detector array (3) disposed within the rotatable gantry (6) and configured to detect high frequency electromagnetic energy attenuated by the subject (5); multiple high frequency electromagnetic energy projection sources configured to project magnetic energy fan wherein each projection source is configured to operate positioned within the rotatable gantry and multiple high

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frequency electrobeams toward the subject; and at a proportional duty cycle per scan (column 8, lines 4-27; column 9, line 32-60; column 5, lines 25-39).

With respect to claim 19, Sohval teaches that the multiple high frequency electromagnetic energy projection sources include a first source (9) and a second source (11) and wherein the first and the second source each operate at a 50% duty cycle per scan (column 5, lines 37-39).

With respect to claim 20, Sohval teaches that the sources are configured to project the multiple high frequency electromagnetic energy fan beams such each fan beam has a similar spatial coverage along a z'-direction (Fig.14).

With respect to claim 21, Sohval teaches that the CT system includes a plurality of anodes and a plurality of cathodes, and further comprising a controller configured to sequentially fire each cathode before re-firing a respective cathode (column 9, lines 42-49).

With respect to claim 22 Sohval teaches the source arrangement wherein the number of anodes equals the number of cathodes (column 4, lines 32-40).

With respect to claim 23, Sohval teaches a computer programmed to execute an image reconstruction process and wherein the electromagnetic energy projection sources are collectively considered a single high frequency electromagnetic energy projection source by the image reconstruction process (column 5, lines 59-66).

With respect to claim 24, Sohval teaches that the CT system is configured to non-invasively acquire diagnostic data of a medical patient (column 8, lines 14-17).

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3. Claims 1, 2, 7, 9, 11, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Zhou et al. (US Patent 6,553,096 B1).

With respect to claim 1, Zhou teaches an anode assembly (1400) comprising: an anode disc (1404); a first x-ray source connected to the anode disc and configured to emit a first fan beam of x-rays (1410); a second x-ray source connected to the anode disc and configured to emit a second fan beam of x-rays (1412); and wherein the first x-ray source has a distance from a center of the anode disc different than that of the second x-ray source (column 14, lines 20-37).

With respect to claim 2, Zhou teaches that the anode disc is rotatable (Fig.14).

With respect to claim 7, Zhou teaches that each fan beam has a penumbra that extends along a z-axis (Fig. 14).

With respect to claim 9, Zhou teaches the x-ray tube assembly comprising: a plurality of independently controllable electron sources configured to emit electrons; and a plurality of target electrodes configured to receive electrons emitted by the plurality of independently controllable electron sources and emit a plurality of fan beams of radiographic energy in response thereto (column 14, lines 21-37).

With respect to claim 11, Zhou teaches that each fan beam extends along a z-axis (Fig. 14).

With respect to claim 14, Zhou teaches that the respective focal spots are spatially separated from one another in an x-direction (Fig.14).

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With respect to claim 15, Zhou teaches that the plurality of electron sources includes a pair of cathode filaments and wherein the pair of cathode filaments is configured to alternately fire during an imaging scan (column 14, lines 21-37).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sohval et al. (US Patent 4,637,040) in view of Tang (US Patent 6,798,865 B2).

With respect to claims 8 and 12, Sohval teaches claimed invention except that the source includes a tungsten target wherein an x-ray track integrally formed in a bevel region of the anode disc. Tang teaches an x-ray tube comprising a tungsten target track for generating x-rays while the anode rotates at high velocity (column 1, lines 19-21). It would have been obvious to one of ordinary skill in art at the time the invention was made to employ the tungsten target track for each x-ray source of the anode assembly of Sohval because it would generate stable x-ray fan beams for scanning an object of interest while

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rotating the assembly at a high velocity.

Conclusion

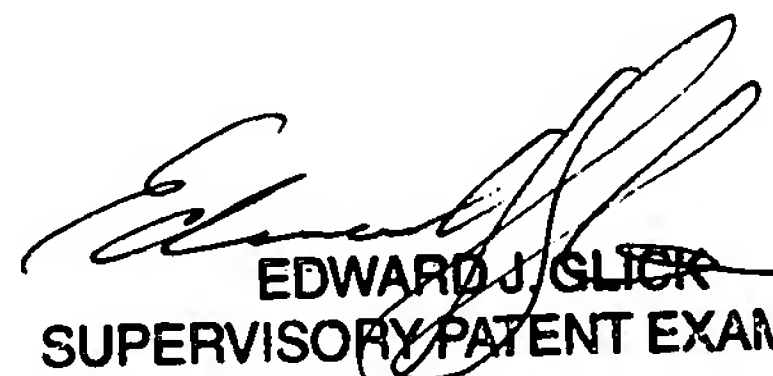
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00- 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irakli Kiknadze
April 4, 2005

IK


EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER